AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

9. (Currently Amended) A method for compensating for the dispersion of co-transmitted optical signals having different wavelengths,

wherein the transmitted optical signals are mutually coupled into an arrangement composed of optically interconnected photonic crystals ~~(K1-Kn)~~, which are positioned one after another on at least one waveguide;

in each photonic crystal, only those signals of one wavelength are reflected or diverted, and the signals of the other wavelengths are transmitted, unattenuated, to the downstream photonic crystal;

<u>wherein</u> ~~it holding~~ for the signals of each wavelength, ~~that~~ the path length from the point of in-coupling to the point in the ~~particular~~ <u>respective</u> photonic crystal ~~(K1-Kn)~~ where they are reflected or deflected, is acted upon by a negative dispersion, which alters or completely cancels the positive dispersion of the coupled-in signals, and the resulting signals of all wavelengths are subsequently further co-transmitted.

10. (Currently Amended) The method as recited in claim 9,

wherein dispersion differences within the limits preset by ~~the~~ dispersion shifters ~~(NLO1-NLOn)~~ can be compensated for by <u>the</u> dispersion shifters ~~(NLO1-NLOn)~~ inserted into the waveguide.

11. (Currently Amended) An arrangement for compensating for the dispersion of co-transmitted optical signals having different wavelengths,

wherein the arrangement is composed of ~~the~~ successively ordered photonic crystals ~~(K1-Kn)~~, a <u>respective</u> photonic crystal ~~(K1-Kn)~~ being permanently assigned to each wavelength as a function of its dispersion;

the photonic crystals ~~(K1-Kn)~~ are positioned on at least one common optical waveguide ~~(2)~~;

each photonic crystal ~~(K1-Kn)~~ is tuned to reflect or deflect the signals of one

wavelength and to transmit the signals of other wavelengths, unattenuated;

the path length from the point of in-coupling to the point in the particular photonic crystal ~~(K1-Kn)~~ where the signals are reflected or deflected, being acted upon by a negative dispersion, which compensates for the positive dispersion of the coupled-in signals;

and the photonic crystals are optically connected to at least one module which holds ready the reflected or deflected signals of all wavelengths again for further transmission.

12. (Currently Amended) The dispersion compensation arrangement as recited in claim 11,

wherein the arrangement is composed of at least two photonic crystals ~~(KS1 through KS2)~~ designed as selective reflection filters, disposed one after another on a waveguide ~~(2)~~, the crystals being connected via an optical circulator ~~(1)~~ to ~~the~~ an optical fiber input ~~(E)~~ and to ~~the~~ an optical fiber output ~~(A)~~,

and the first photonic crystal ~~(KS1)~~ being designed as a reflection filter for the first wavelength ~~(λ_i)~~ and the second photonic crystal ~~(KS2)~~ as a reflection filter for the second wavelength ~~(λ_{i+1})~~.

13. (Currently Amended) The arrangement as recited in claim 11,

wherein to simultaneously roughly or finely tune the negative dispersion for various wavelengths, controllable dispersion shifters ~~NLO1 through NLOn~~ of non-linear optical materials are coupled in optically between the photonic crystals ~~(KS1-KSn)~~ designed as selective reflection gratings.

14. (Currently Amended) The dispersion compensation arrangement as recited in claim 11,

wherein the waveguide ~~(2)~~ is composed of two opposing partial sections, the first partial section being assigned to the optical fiber input ~~(E)~~, and the second partial section being assigned to the optical fiber output ~~(A)~~; and at least two photonic crystals ~~(KD1 and KD2)~~ designed as drop elements are disposed one after another on the first fiber section ~~(2)~~, including outputs for laterally repelling signals of one wavelength; and two photonic components ~~(KA1;KA2)~~ designed as adders are disposed one after another on the second fiber section; each photonic crystal ~~(KD1;KD2)~~ designed as a drop element being optically connected via its output for laterally repelling, to the oppositely situated input of the photonic crystal ~~(KA1;KA2)~~ designed as an adder.

15. (Currently Amended) The arrangement as recited in claim 11,

wherein to roughly or finely tune the negative dispersion of each individual wavelength, controllable dispersion shifters ~~NLO1 through NLOn~~ of non-linear optical materials are coupled optically into the optical connections between the laterally disposed outputs of the photonic crystals ~~(KS1-KDn)~~ designed as drop elements and the photonic crystals ~~(KA1-KAn)~~ designed as adders.

16. (Currently Amended) The arrangement as recited in claim 11,

wherein to simultaneously roughly or finely tune the negative dispersion for various wavelengths, controllable dispersion shifters ~~(NLO1-NLO3)~~ of non-linear optical material are coupled optically into the first waveguide section ~~(2)~~ upstream from the photonic crystals ~~(K3 through K4)~~ designed as drop filters.